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ABSTRACT

It is the responsibility of the nation's schools to teach students to become lifelong, independent, self-assertive learners and evaluators of information. If schools are to analyze and evaluate whether or not they adequately address the goal of teaching learning skills across the curriculum, a conception of the components of learning skills and appropriate instructional strategies is needed. Once programs have been developed, evaluating the curriculum for learning skills is the next step. In a guide, student competencies for each of 10 learning skills were developed as broad general statements about the types of student behaviors anticipated as outcomes of instruction regardless of age or grade level. Current practices in the classroom which encourage the development of learning skills across the curriculum can be identified. The competencies are listed in an appendix entitled "Incorporating Learning in Curricular Areas" and cover: self evaluation; goal setting; time management; monitoring attitudes; motivation; locating information; selecting information; organizing information; communicating information; and memory training. (LL)

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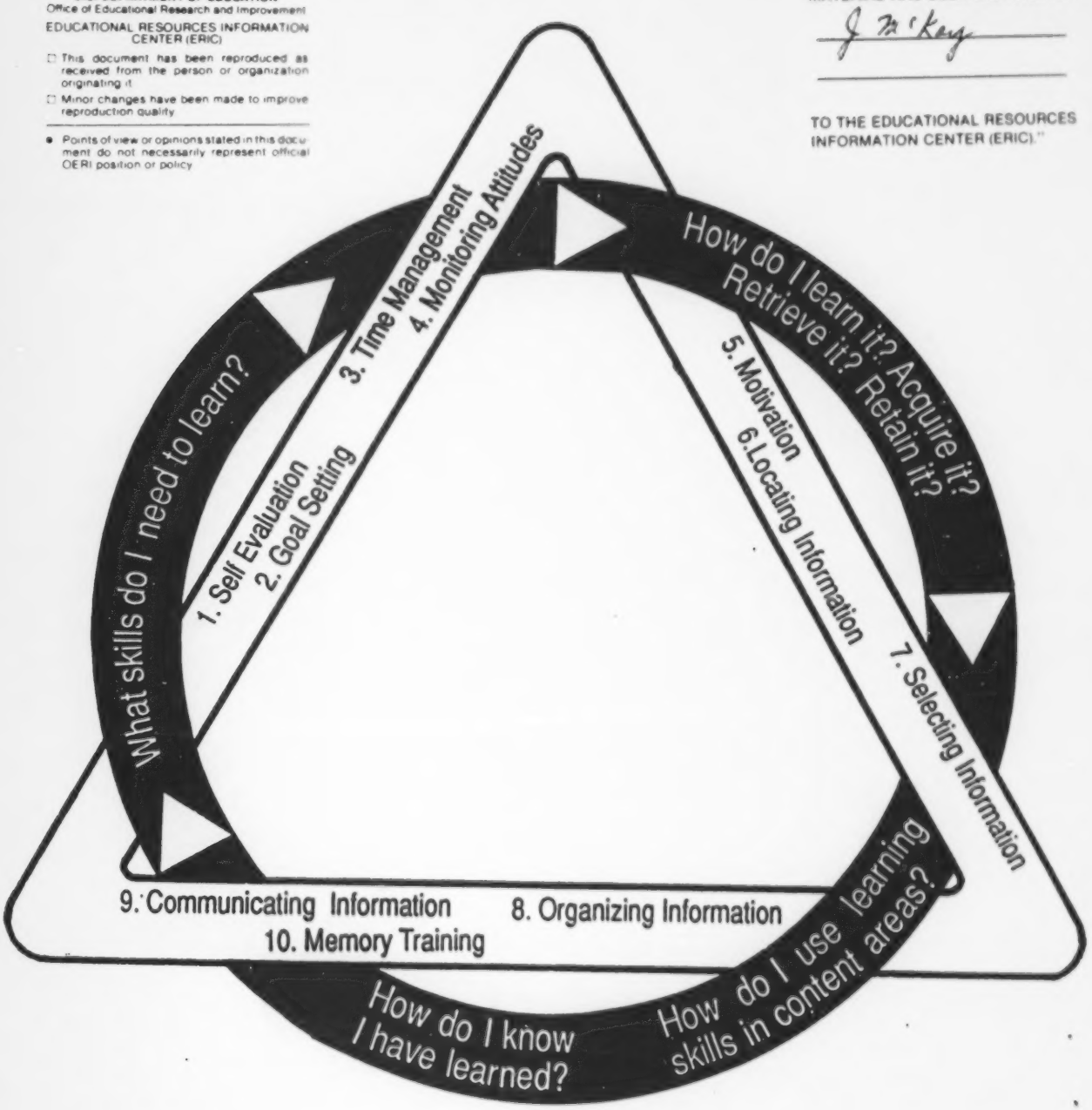
What skills do I need to learn?
1. Self Evaluation
2. Goal Setting
3. Time Management
4. Monitoring Attitudes
How do I learn it? Acquire it? Retrieve it? Retain it?
5. Motivation
6. Locating Information
7. Selecting Information
8. Organizing Information
9. Communicating Information
10. Memory Training
How do I use learning skills in content areas?
How do I know I have learned?

A Model for Learning to Learn

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A Paper presented at a Conference, Critical Thinking: Implications for Teaching and Teachers, Institute for Critical Thinking, Montclair State College, Upper Montclair, New Jersey, November 1, 1991.

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Learning to Learn Skills

J. Montgomery and J. McKay

Learning to learn is one of the paramount skills students need to acquire and build throughout their lives. A Nation at Risk and other reports on education such as First Lessons have stressed the critical responsibility of the nation's schools in teaching students to become lifelong, independent, self assertive learners and evaluators of information.

In the last two decades, researchers have investigated effective schools and effective teachers more frequently than aspects or elements of learning. The research focus has been on the teacher rather than the learner. Perhaps this is due in part to the observation that "learning is a highly complex aspect of human mental functioning about which psychologists are by no means in agreement" (Zais, 1976).

In the last two decades, two important findings from research in this area seem to be accepted by most educators. First, learning to learn begins very early in a child's life and the earlier we begin to teach learning skills the more successful the child can be in various learning situations; and 2) learning to learn does not end with formal secondary education.

Seymour Papert, in Mindstorms: Children, Computers and Powerful Ideas, provides a powerful analogy for the classroom teacher when thinking about learning to learn. Papert says, "Learning to use computers can change the way children learn

everything else,"(p. 8). Learning to learn empowers children and changes the way each child sees himself or herself as a successful learner.

As early as 1972, Dale outlined the characteristics of the person who has learned how to learn. He suggested that a person has these characteristics:

1. A heightened sensitivity to things that matter.
2. A feeling of continuing and cumulative power and growth in understanding.
3. The delight that comes from discovery.
4. An effective system for finding, mentally filing, and retrieving ideas.
5. Flexibility in transferring ideas from one situation to another.
6. Ease in obtaining meaning from words and images.
7. A zest for more learning. (p. 56)

Today we live in an information age, and all citizens face the complex task of locating and evaluating information for personal use. Today's students face an information explosion, particularly in electronic form, and the ability to handle information has been identified as an adult survival skill. Schools have a major responsibility to infuse these skills throughout the curriculum.

In 1990, A Guide to Developing Learning Across the Curriculum, (McKay and Montgomery), identified ten learning skills. This guide encourages effective approaches to the use of learning to learn skills in the classroom. The content is derived from research on learning skills as well as effective classroom practices. This publication is a guide to thinking about learning to learn as well as implementing learning to learn

skills. Four questions generated from the student's point of view were generated in developing this guide:

1) What skills do I need to learn?
2) How do I learn, acquire, retrieve, and retain it?
3) How do I use learning skills in my subjects?
4) How do I know what I have learned?

To answer the first question a number of skills which related to "getting ready for learning" were chosen. The skills include: **self-evaluation, goal setting, time management, monitoring attitudes, and motivation.** The topic of learning styles is included with self-evaluation; types of goals and self-directed learning are included with goal setting, planning and pacing skills are included in time management. Topics of attention control and power thinking are included in monitoring attitudes and four elements that affect motivation (student success, classroom environment, instructional strategies, and rewards/reinforcements) are included in the motivation skill.

The learning to learn skills of **locating information, selecting information, organizing information, communicating information, and memory training** relate to the second question. The third question can be answered by examining how the ten previous learning skills can be implemented in the eight content areas of **language arts, social studies, art, foreign language, science, mathematics, health/physical education, and vocational education.**

The last question, "How do I know what I have learned," is crucial for learning. Through the use of standardized tests,

classroom observations and program evaluation, students and teachers can get meaningful feedback on the progress in learning.

Student competencies for each of the ten learning skills were developed as broad general statements about the types of student behaviors anticipated as outcomes of instruction, regardless of age or grade level.

1. **Self Evaluation**
   The student will identify learning skills that he/she needs to acquire or improve by completing three or more self-evaluation instruments.

2. **Goal Setting**
   The student will demonstrate the ability to develop and execute short-term and long-range goals through self-directed independent projects within and outside the classroom.

3. **Time Management**
   The student will demonstrate time management skills involving planning and pacing in a classroom instructional activity or independent study.

4. **Monitoring Attitudes**
   The student will take responsibility for his/her learning by practicing attention control and power thinking techniques.

5. **Motivation**
   The student will identify what motivates him/her and practice strategies to heighten extrinsic and intrinsic motivation.

6. **Locating Information**
   The student will be able to identify and use print and non-print sources to locate information about a topic, issue, or concept.

7. **Selecting Information**
   The student will demonstrate the skills of critical analysis of references, interpreting individual findings, and drawing conclusions relative to a topic, issue, or concept of his/her choice.

8. **Organizing Information**
   The student will demonstrate his/her ability to take notes from reading or a lecture as a basis for retaining information to be used in an assignment on a

topic, issue, or concept of the student's choice.

9. **Communicating Information**
   The student will demonstrate reading, writing, speaking, listening, and media skills which will enhance their information-processing abilities.

10. **Memory Training**
    The student will develop and refine memory training skills through the techniques of deep processing, remembering, relating, and test taking.

Strategies were developed for the infusion of these ten learning skills into eight content areas. The examples included in the K-12 curriculum guide are intended to energize the thinking and prompt the classroom teacher into identifying current practices in the classroom that encourage the development of learning skills. For example the learning skill of **goal setting** was combined with **foreign language** at the **elementary** level in this suggested activity.

> Help students see how goals can be met by deciding as a class to learn five new vocabulary words in a week; then, add the goal of learning "new phrases." Remind students how you must set and modify your goal to increase your vocabulary. (p. 35)

A **secondary** activity with **self-evaluation** in **Physical Education** suggested that students follow up on physical fitness tests.

> After assessing personal fitness levels, have students use information about diet, height, weight, gender, and daily exercise for various computer nutritional programs to determine daily menus for either weight reduction or weight gain. Discuss how personal factors affect the weight program. Monitor progress toward the self-improvement goal. (p. 45).

In the guide, suggested elementary activities for the ten learning skills in the eight content areas (80) and another eighty activities for the secondary level provide a background upon which the classroom teacher can reflect on the types of opportunities that students need in the classroom to build and reinforce learning skills.

If schools are to analyze and evaluate whether their curriculum adequately addresses the goal of teaching learning skills across the curriculum, they need a conception of the components of learning skills and of appropriate instructional strategies. In addition, they need:

> -a model of what an effective, coordinated schoolwide plan for infusing learning to learn should include.
> -a suggested procedure for developing such a plan.
> -suggested procedures, including sample instruments, for assessing the current curriculum by comparing it to the model plan. (p. 56)

Research findings underscore the obvious, i.e., skills are best mastered when needed. Teaching these skills in isolation does not guarantee learning; schools need to plan to teach and reinforce each skill in conjunction with the student's need to use the skill. Although different authorities advocate difference approaches, most would agree on certain essentials, including:

Agreement among the staff about definitions of learning skills and about what methods should be used for correlating learning skills with content area skills. Teaching consensus requires study and discussion, especially with teachers from

different disciplines, but is important in providing consistency and reinforcement in teaching.

Use of common learning terminology across disciplines and grade levels. If the same or similar skills are called by the same name in many contexts, students will find it easier to remember them and to grasp their essential qualities even when superficial differences exist in the skills that are used in different contexts. Also, teachers will find it easier to collaborate and communicate if they use the same language.

Focus on a limited number of skills taught thoroughly rather than many taught haphazardly. As with learning any skills, students need considerable practice, review, and reinforcement to achieve mastery.

Agreement about when various skills are to be taught and reinforced. This agreement will also require much discussion among teachers, but it is the only way to ensure that all the agreed on skills and types of thinking are taught and developed sufficiently.

Emphasis on affective as well as cognitive aspects of learning. How student and teachers feel about themselves as learners has a great impact on how well they learn. The general strategies of the holistic approach (open, encouraging classroom climate, thoughtful questioning style, etc.) are important in helping students develop confidence in themselves as learners.

A process for developing a schoolwide plan is needed. Each school has the responsibility for ensuring that students have the

opportunity to master learning skills. One method used successfully by many schools is:

> 1. A leadership team determines the local learning skills curriculum.
> 2. Responsibility for skills is assigned to certain professional school personnel at certain grade levels or in certain content areas.
> 3. Responsibility for a major portion of the information skills is assigned to the library media specialist.
> 4. Teachers and the library media specialist are given time to plan together for appropriate correlation of skills with the content area.
> 5. Teaching of designated skills is done by the most appropriate person at the selected grade level.
> 6. Methods for evaluating mastery of the skills are determined in advance and the responsibility for evaluation is assigned.
> 7. Appropriate schedules are developed for integrating learning skills lessons with content area units. (p.57)

Creating a grid with learning skills and sub-skills (vertical and left) and the eight content areas (horizontal and right) can be used for developing such a plan and for analyzing present curriculum. It serves as an easy way to consolidate decisions about how various learning skills and processes should be taught or for gathering information about where they now exist.

Once programs have been developed, evaluating the curriculum for learning skills is the next step. The purpose of the assessment is to gather diagnostic information to help determine the needed direction of the learning skills or learning plan.

Evaluation answers the question, "Did we learn what we set out to learn?" This question can be addressed by the classroom teacher for a group of students, or by the curriculum committee for an entire school. Evaluation of learning skills involve

four categories: standardized tests; teacher observations, checklists, and student or peer evaluation. Analysis of classroom observations, talking to teachers and students of similar age or grade level can reveal interesting data. If patterns emerge for a group of students in a grade, school, or district, then appropriate learning skills can be developed or selected.

The classroom teacher must be committed to the need for the infusion of the ten learning skills into the curriculum. Formative evaluations gather information "along the way" as teachers begin to develop and implement learning skills into instructional programs. Formative evaluation refers to one-on-one feedback from students or other teachers about testing, instructional activities, and small group reaction to instruction. Summative evaluation analyzes the effectiveness of the program at the end of instructional periods. The process of successful evaluation includes identification of objectives, evaluation activities, and drawing inferences from the data collected. Better decision-making is the result.

Learning to learn is a critical aspect of the daily life of each learner. At times that learner is the student, often it is the classroom teacher, and without question it includes support personnel. Before a correlation with content area skills can be outlined in any school, the classroom teacher must be committed to the need for the infusion of the ten learning skills. The learning skills strategies are generic at the elementary and

secondary levels so that the classroom teacher and the learning team may add, develop, and create strategies on their own.

Learning to learn, as Ralph Tyler suggested, is the most powerful of all knowledge. William Glasser (1986) suggests that "there is no punishment that can make any students learn if they don't want to" (p. 13). In the belief that all student can learn, Iowa's Guide to Developing Learning Across the Curriculum is provided for revision, input, clarification, and comment as we begin to "learn" together.

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APPENDIX A

Incorporating Learning in Curricular Areas

1. Self-Evaluation **Grade Level** _____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. Remember previous successes with learning.								
2. Recall previous frustration with studying.								
3. Prioritize learning skills to be acquired.								
4. Create a list of strengths and weaknesses related to the learning process.								
5. Identify what motivates own learning.								
6. Complete three self-assessments on learning skills.								
7. Analyze results of self-assessments.								
8. Draw conclusions from data collected.								
9. Devise a plan for improving and developing personal/class learning skills.								
10. Implement the learning skills improvement plan.								

Adapted from *A Guide to Developing Higher Order Thinking Across the Curriculum*, Iowa Department of Education, 1989.

Reprinted from: McKay, J. & Montgomery, J. (1990) A Guide to Developing Learning Across the Curriculum, Iowa Department of Education.

2. Goal Setting

Grade Level _____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. Describe the characteristics of effective goals.								
2. Describe situations in life when the goal-setting process can be used.								
3. Use the goal-setting process in the classroom and outside of school.								
4. State a goal in writing.								
5. Identify a time frame to reach this goal.								
6. Imagine accomplishing the goal.								
7. Write an action plan to accomplish the goal.								
8. Identify, periodically, the next steps to take to accomplish the goal.								
9. Estimate the time needed to complete each step of the plan.								
10. Evaluate the relationship between the goal and the action plan. Will completing the action plan lead to attaining the goal?								

3. Time Management

Grade Level _____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. Brainstorm things to be done.								
2. Prioritize the list with A-B-C method.								
3. Use time management skills in planning for a specific activity.								
4. Design a time schedule for a school day or activity outside of school.								
5. Review the time schedule if necessary.								
6. Share time management tips with other students.								

4. Monitoring Attitudes

Grade Level_____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
Attention Control								
1. Discuss importance of attention control.								
2. Describe situations when attention control is needed.								
3. Take steps to improve concentration by identifying thoughts that should be bracketed.								
4. Practice bracketing during instruction.								
5. Demonstrate the key components of the attention control process.								
6. Assess own concentration.								
Power Thinking								
1. Define affirmations, power thinking, visualization.								
2. Describe impact of power thinking.								
3. Discuss whether attitudes and thoughts affect own behavior.								
4. Practice the process of power thinking.								
5. Keep a log or journal about experiences with power thinking.								
6. Share power thinking experiences with others.								

5. Motivation

Grade Level _____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. Discuss the importance of motivation.								
2. Analyze what motivates the individual student.								
3. Identify rewards or incentives that are used to motivate students.								
4. Develop techniques for evaluating the relationship between the quality of a product and the motivation to produce the product.								
5. Know the difference between extrinsic and intrinsic motivation.								
6. Practice self-motivation as a learning skill.								

6. Locating Information

Grade Level _____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. Distinguish between fiction and nonfiction, print and nonprint.								
2. Identify encyclopedias, dictionaries, pictionaries, and other reference tools.								
3. Locate specialized reference sources such as biographical and geographical dictionaries, special sports or science encyclopedias, Childrens Magazine Guide, atlases, thesauri, almanacs, quotation dictionaries, etc.								
4. Use sources such as microfiche/film readers and printers, photocopy machines, bibliographies, database guides and aids, newspaper indexes, etc.								
5. Use local resources such as telephone directories, newspapers, etc., to develop a community-based project.								
6. Identify services and materials provided by information networks and electronic databases.								
7. Use an electronic database.								
8. Define cost considerations regarding on-line vs. manual searching of databases.								
9. Outline steps for obtaining information from community sources: certified birth certificate, passport, marriage license, automobile title, drivers license, tax forms, etc.								

7. Selecting Information

Grade Level _____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. Distinguish between fact and opinion in newspaper and magazine editorials, written or taped speeches, television programs, and television advertisements.								
2. Recognize supportive detail and make inferences.								
3. Recognize trends and patterns on a given topic over time.								
4. Cite examples of cause and effect in relationships.								
5. Recognize forms and effects of bias, both favorable and unfavorable.								
6. Make inferences based on individual feelings.								

8. Organizing Information

Grade Level_____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
1. State the basic skeletal form of an outline.								
2. Recognize outline form and practice using it in oral and written presentations.								
3. Use precise-writing or summarizing as a form of note taking.								
4. Illustrate effective summary writing by using a variety of sources.								
5. Create own system of note taking for responding to reading or lecture.								
6. Demonstrate accurate note-taking skills.								
7. Use study guides as a means of structuring individual reading.								

9. Communicating Information

Grade Level_____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
Reading 1. Develop vocabulary skills in content area.								
2. Utilize comprehension skills in content area.								
3. Practice reading-related study skills in content area.								
4. Use pre-reading activities to enhance comprehension of assignments.								
5. Facilitate after-reading activities to develop recall of assignments.								
Writing 1. Use writing activities as a means of discovering knowledge and learning what the student knows.								
2. Use writing as a process including opportunities for pre-writing, drafting, revising, editing, and sharing.								
Speaking 1. Demonstrate effective oral communication skills in conversation, discussion, and social interactions in the classroom.								
2. Develop skills in public speaking, discussion, and debate to clarify issues and present information.								

Communicating Information, cont.	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
3. Interpret literature through use of prose, poetry, and plays.								
Listening								
1. Develop listening skills in receiving information.								
2. Interpret messages received in a variety of ways.								
3. Practice listening skills through corrective feedback during classroom activities.								
Media								
1. Demonstrate use of audiotape, film, computers, etc., in classroom activities.								
2. Use media to enhance communication process.								
3. Use media to facilitate individual and group instruction.								

10. Memory Training

Grade Level _____

List the learning skills/processes selected by your school district. Check the curricular areas where a specific process will be emphasized. Each skill/process should be emphasized consistently in a number of areas.

	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
Deep Processing								
1. Generate images about information.								
2. Generate verbal information.								
3. Generate physical sensations.								
Remembering								
1. Realize memory can be improved.								
2. Analyze effects of attitudes on memory.								
3. Practice memory skills such as organizing ideas, self-recitation, spacing reviews, and employing mnemonics.								
Relating								
1. Think of ways to personalize the material.								
2. Practice techniques of "chunking" material.								
Test Taking								
1. Anticipate test questions at various levels of cognition.								
2. Record feelings and changes in attitude toward test taking.								
3. List the steps in preparing for an exam.								

Memory Training, cont.	Arts	Foreign Language	Health/Physical Ed.	Language Arts	Mathematics	Science	Social Studies	Vocational Education
4. Compare techniques for preparing for an essay vs. objective test.								
5. Analyze test errors to determine pattern.								
6. Practice relaxation exercises before test.								
7. Practice power thinking before test taking.								